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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,560	03/23/2004	Weirong Wang	5260-000201/US	2572
28997 7590 06/07/2007 HARNES, DICKEY, & PIERCE, P.L.C 7700 BONHOMME, STE 400 ST. LOUIS, MO 63105			EXAMINER MULLINS, BURTON S	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 06/07/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/806,560

Applicant(s)

WANG ET AL.

Examiner

Burton S. Mullins

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24, 26-32, 34-50 and 58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31, 35-43, 47 and 58 is/are allowed.
- 6) ☒ Claim(s) 24, 26, 27, 29, 34, 44-46, 48, 49 and 59 is/are rejected.
- 7) ☒ Claim(s) 28, 30, 32 and 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

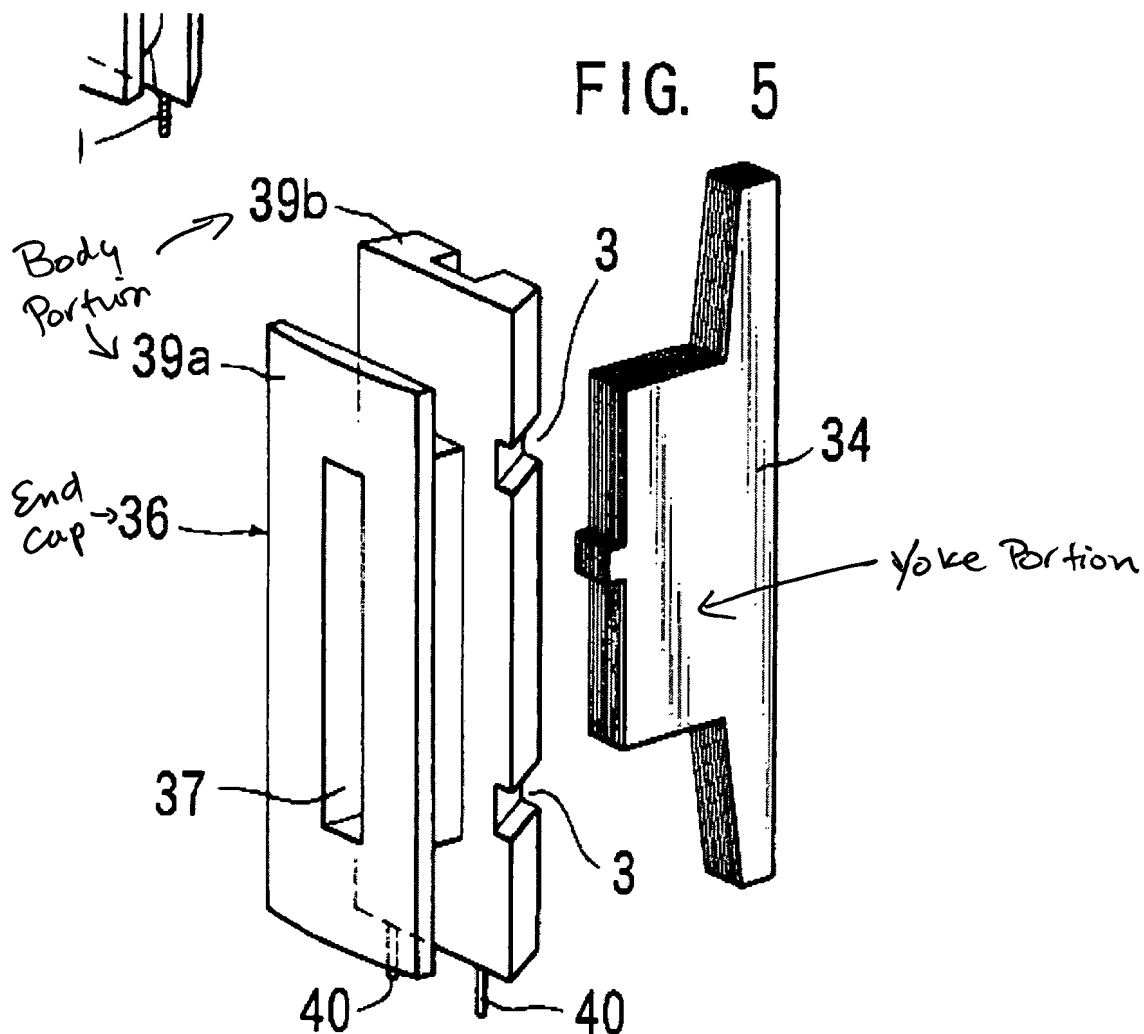
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 24, 26-27, 29, 34, 44, 46, 48-49 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US 6,177,751). Suzuki teaches an end cap comprising bobbin 36 (Fig.3) of an electromagnetic machine having a stator 6 with a plurality of adjacent segments 34 (salient poles of yokes 32; Figs.2-5), the end cap 36 including a body portion (collar portion 39a/39b generally surrounding hole 37; Fig.5) configured for positioning on a yoke portion (not numbered, extension of salient pole 34) of one of the adjacent segments 34 (Fig.5), the body portion 39 having first and second ends (left and right sides of the collar 39; Figs.6&7; c.4, lines 30-36) configured to couple to ends on adjacent end caps 36 to substantially hold the adjacent segments together (projections and depressions on both edge portions of the collar allow for engagement of the end caps/bobbins 36 with one another; c.4, lines 30-36; Figs.6-7&9).

Regarding the added limitation of “first and second snap couplings on the first and second ends, respectively, the first and second snap coupling configured to snap couple...[and] interlock” the adjacent segments in claim 24, and similar amendments to claims 34, 44 and 59 directed to the “snap” coupling feature, this is inherently taught since Fig.9 discloses a projection comprising a male member, a depression or slot 45 comprising a female member forming a ‘snap slot’ 45 in the second end in the embodiment of Fig.9 (c.4, lines 51-52). Since the bobbin segments are

made of resin (c.3:36), the male and female members form a “snap” connection because resin is inherently pliable, thus allowing the male and female members to contract and expand, respectively, when connected together.



Regarding claim 26, plural adjacent end caps 36 are adjustably aligned and coupled together by means of the snap couplings on each end cap (Fig.9).

Regarding claims 27 and 29, the projection comprises a 'male member', the depression the 'female member', with the female member forming a 'snap slot' 45 in the second end in the embodiment of Fig.9 (c.4, lines 51-52).

Regarding claim 34, Suzuki teaches a stator having a plurality of adjacent segments 34; a plurality of end caps 36, each end cap having a body portion (collar) 39 positioned on a yoke portion (not numbered, Fig.5) of one of the adjacent segments and having first and second ends (Fig.5), and means for coupling the first and second ends of the adjacent end caps 36 to substantially hold the adjacent segments 34 together (projections and depressions on both edge portions of the collar 39 allow for engagement of the end caps/bobbins 36 with one another, which therefore holds the adjacent segments 34 together; c.4, lines 30-36; Figs.6-7&9). Fig.9 teaches a projection comprising a male member, a depression or slot 45 comprising a female member forming a 'snap slot' 45 in the second end in the embodiment of Fig.9 (c.4, lines 51-52).

Regarding method claims 44, 46, 48-49, Suzuki teaches the method since the elements of a stator having a plurality of segments 34 and a plurality of end caps 36, where the end caps are positioned on each of the segments 34, each end cap 36 having a body portion 39 for engaging a yoke portion of one of the segments 34 (Figs.4&5), each body portion having opposing ends (Fig.5); ends of the segments 34 positioned adjacent one another (Fig.2), with the segment ends substantially held together by coupling means (projections and depressions, Figs.6-9) coupling ends of the adjacent end caps 36 together.

Regarding claim 46, the projections and depressions comprise male and female members.

Regarding claim 48, since the projections and depressions are arranged parallel to the axis, some movement at the coupled ends of the end caps 36 is permitted.

Regarding claim 49, an interference fit is formed by the coupled projections and depressions, per Figs.6-9.

Regarding claim 59, the embodiment of Fig.9 comprises a deformable male member on one end and a female member (slot) 45 on the other end, the deformable male member configured for “snap fitting” into female member 45.

3. Claims 24, 26-27, 29, 34, 44, 46, 48-49 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato (JP 2001-008395). Sato teaches an end cap (insulator) 4 (Fig.3) of an electromagnetic machine having a stator with a plurality of adjacent segments 1 (Figs.1&2), the end cap 4 including a body portion (outer and inner walls) 6/7 configured for positioning on a yoke portion 1a/1b of one of the adjacent segments (Fig.3), the body portion 6 having first and second ends (Fig.3) configured to couple to ends on adjacent end caps 4 to substantially hold the adjacent segments together (projections and depressions 10/9 on either side of the wall 7 engage respective projections and depressions of adjacent end caps; abstract Figs.1-3). Regarding the added limitation of “first and second snap couplings on the first and second ends, respectively, the first and second snap coupling configured to snap couple...[and] interlock” the adjacent segments in claim 24, and similar amendments to claims 34, 44 and 59 directed to the “snap” coupling feature, this is inherently taught even though there is no explicit disclosure because the end cap comprises a resin “insulator” (JPO machine translation, [0027]), i.e. a synthetic plastic material resilient and deformable enough so that the projection section 10 “snaps” into recess 9.

Regarding claim 26, plural adjacent end caps 4 are adjustably aligned and coupled together by means of the couplings 9/10 on each end cap wall 7.

Regarding claims 27 and 29, the projection 10 comprises a 'male member', the depression 9 the 'female member', with the female member forming a 'snap slot' 45 in the sense that it fits into the male member 10.

Regarding claim 34, Sato teaches a stator having a plurality of adjacent segments 1; a plurality of end caps 4, each end cap having a body portion (6, 7 or 8; Fig.3) positioned on a yoke portion 1a/1b of one of the adjacent segments 1 and having first and second ends (Fig.3), and means 9/10 for coupling the first and second ends of the adjacent end caps 4 to substantially hold the adjacent segments together (abstract).

Regarding method claims 44, 46 and 48-49 Sato inherently teaches the methods since all the elements are disclosed. In particular, the coupling means 9/10 allows for parallel movement (claim 48) and interference fit (claim 49). Note end caps 6 and 8 on opposing surfaces of segments 1 and wire 12 (claim 51). Parts of the body portion 6 which fit around flat portion 5 (Fig.3) comprise first and second legs on sides of each tooth (claim 52).

Regarding claim 59, the insulator/end cap 4 comprises resin and is thus deformable, so that the projection 10 comprises a deformable male member on one end and the depression 9 a female member on the other end, the deformable male member configured for "snap fitting" into female member because of the deformable nature of the resin end cap.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Yamazaki et al. (US 6,127,753). Sato's invention as shown in Figs.1-9 does not teach a ridged end of a segment 1 positioned into slotted end of another segment 1.

Yamazaki teaches in his prior art description (c.1, lines 20-42; Figs.5a-5c) that the core of a motor may be constructed in a serial fashion by connecting core segments 11 using concave grooves (slots) 15 and convex pieces (ridges) 16.

It would have been obvious to modify Sato and provide a ridged and slotted end on each stator segment per Yamazaki to join the segments and form a stator.

Allowable Subject Matter

6. Claims 31, 35-43, 47 and 58 are allowed.

Regarding claim 31, neither Suzuki, Sato or the prior art teaches that the ends of the end cap define slots configured for engagement by a clip having a first portion for fitting in one of the slots and a second portion fitting in a slot in an adjacent end cap.

Regarding claims 35 and 42-43, neither Suzuki, Sato or the prior art teaches the claimed end cap including, inter alia, the feature that "a portion of the body surface [of the end cap] is positionable against the surface of an adjacent [stator] segment..." In Suzuki and Sato, each end cap body surface contacts the surface of the stator segment upon which it rests, not the surface of an adjacent stator segment. Claim 43 recites a similar feature of "each end cap positioned against the segment surface of one of the adjacent [stator] segments".

Regarding method claims 47 and 58, neither Suzuki, Sato or the prior art teaches the steps of: "fitting clips in slots defined in the adjacent ends on the adjacent end caps" (claim 47);

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or “positioning a portion of the surface on each of the end caps against the opposing surface of at least one of the adjacent segments” (claim 58).

7. Claims 28, 30, 32 and 50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 28, neither Suzuki, Sato or the prior art teaches that the male member includes a bifurcate catch extending from the first end of the body portion which snap-fits in the female coupling member.

Regarding claim 30, neither Suzuki, Sato or the prior art teaches the particular configuration of the male member is positioned adjacent a slotted end of the stator segment and a female member is positioned adjacent a ridged end of the segment.

Regarding claim 32, neither Suzuki, Sato or the prior art teaches that “the segment has a surface on which the end cap is positionable, and wherein the end cap further comprises: a slot defined in the first end and having an open side for exposing the surface of the segment, and a finger extending from the second end and having a side substantially positionable on the same plane as the surface of the segment, wherein the finger fits within the slot on an adjacent like end cap with the side of the finger positioned against the surface of the adjacent segment so that the surfaces of the adjacent segments lie substantially on the same plane.”

Regarding claim 50, the prior art does not teach, inter alia, the method of “substantially aligning the segment surfaces of the adjacent segments on substantially the same plane by fitting a portion of each end cap surface against the segment surface of at least one of the adjacent [stator] segments.”

Response to Arguments

8. Applicant's arguments filed 30 March 2007 have been fully considered but they are not persuasive. Regarding Suzuki, applicant argues that the embodiment of Fig.9 is not a "snap" coupling. In response, the examiner points out that the end caps 36 in Suzuki are made of resin (c.3:36). Resin is a synthetic plastic material resilient enough for positively securing the edges of the end caps with each other, such that the disclosed projection and depression contract and expand when contacted with each other. Thus, the end caps "snap fit" together. Similarly, with regard to Sato, the end cap comprises a resin "insulator" (JPO machine translation, [0027]), i.e. a synthetic plastic material ~~are~~ resilient and deformable enough so that the projection section 10 "snaps" into recess 9. The connection cannot be formed any other way since Sato teaches that "the plurality of split cores...are joined to each other...by engaging the recessed sections 9...with the projecting sections 10" (abstract). In other words, the "engagement" between projection 10 and recess 9 forms the "snap fit". Thus, both references inherently teach a snap-fit connection even though neither explicitly discloses this.

Conclusion

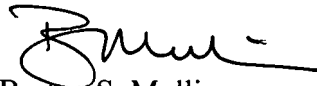
9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
05 June 2007